Health and Safety Plan Addendum
PLANNED INTRUSIVE ACTIVITIES ~~DURING FEBRUARY-MARCH 1997~~ AU 3/5/97
NEAR THE SEEP SW059 SITE
(Addendum to Health and Safety Plan for the 1996 WARP, April 1996, RF/ER-96-0016)

Prepared by: Annette Primrose Annette Primrose / Sr. Proj Mgr 12/5/97
Name Signature Title Date

Introduction.
This HASP addendum covers planned subsurface soil and groundwater sampling activities to be performed in the SW059 area ~~from February through March 1997~~. The objective of this work is to identify an area for placement of a linear groundwater collection system to collect and treat groundwater contaminated with volatile organic compounds (VOCs). The Mound Area (IHSS 113) is thought to be the source for the contaminated groundwater plume.

This Addendum is only for the work to be conducted for the SW059 seep site characterization. The core recovery and groundwater collection program proposed per the SAP is designed to define the areal extent of the groundwater plume for construction of a groundwater collection and treatment system. The scope of this proposed activity is limited to soil core collection by the Geoprobe method with follow-up groundwater sampling. All sample analysis and interpretation will be the responsibility of RMRS. All activities described in this addendum will be conducted in accordance with this addendum, and the HSP for the 1996 WARP. The activities are substantially similar in scope and potential hazard as those described in the geotechnical boring subtask described in the WARP HSP. All activities described in this addendum will be performed by or at the direction of Environmental Restoration Projects personnel. **Project contacts and emergency phone numbers are listed in Table 1.**

Description of Planned Intrusive Activities.
A van mounted Geoprobe sampling rig will be used for sampling. The rig will be used to collect approximately twenty (20) one inch diameter soil cores up to a depth of approximately 15 feet. The equipment will be operated in accordance with procedure 4-S64-ER-OPS-GT.39 Push Subsurface Soil Sample. The direct push method employed by the rig will not generate waste cuttings or airborne dust. The soil samples will be enclosed in liners contained within the sampling assembly. The material within the liners will be containerized and preserved in accordance to the SAP. The containers can be transported directly to the analytical laboratories after screening for surface contamination, minimizing operator contact with potentially contaminated soils. These holes will be cased with PVC pipe after collection of the cores. Approximately 20 groundwater samples and 4 soil samples will be collected. Collection of groundwater samples will be performed under the Groundwater HASP.

Hazard Assessment.
Wildlife No wildlife hazards in addition to those addressed in the WARP HSP are anticipated as a result of the planned intrusive activities.

Chemical and Radiological No hazards in addition to those addressed in the WARP HSP are anticipated as a result of the planned intrusive activities. This work involves potential contact with soil and/or water containing concentrations of chemicals in the parts per billion range. The risk associated with these levels is very low as these concentrations are one to three magnitudes below OSHA PELs. Site specific data provided in the attachment indicates no significant potential for hazardous levels of metal contamination in the subsurface soils to be sampled in the construction area. A table listing analytical data for the groundwater at the SW059 seep has been included as Table 2.

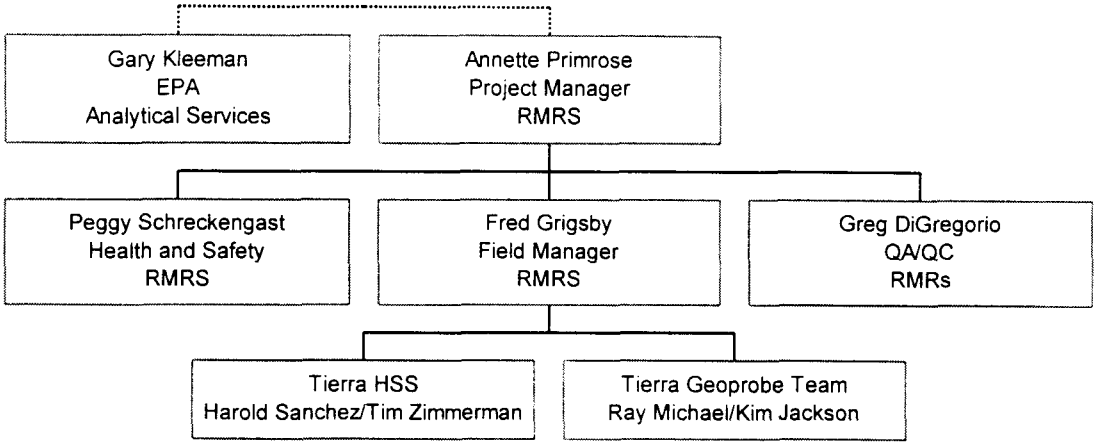
PPE requirements are the same as for the Planned Intrusive Activities during July-August, 1996 within the Mound Area, which are attached as Appendix A.

Physical Cold stress preventative guidelines detailed in the WARP HSP will be followed. The Geoprobe van wheels will be blocked during sampling operations and only the operator and helper will be allowed in the immediate vicinity of the vehicle. Borehole locations will be investigated for the presence of overhead and underground utility lines prior to the commencement of intrusive activities.

Radiological Contamination Monitoring/ Equipment Decontamination
Equipment used for intrusive sampling and well completion will be decontaminated to the extent possible within the work area. Radiological contamination monitoring will be performed for total fixed plus removable and removable alpha and beta/gamma contamination. If contamination levels are below

releasable limits, the equipment may then be released to the 891 Yard by the health and safety specialist (HSS). If additional decontamination is necessary the equipement will be transported to the Main Decontamination Facility for additonal decontamination.

Project Organization
The following organization chart shows the project responsibilities.



Personnel
Personnel monitoring and decontamination procedures as described in the WARP HSP remain in effect.

Approved by: M.C. Broussard / M.C. Broussard / ER Pjs Mngr / 2.20.97
Name / Signature / Title / Date

Approved by: T. Anderson / [signature] / Rad Con Coord / 2/26/97
Name / Signature / Title / Date

Approved by: M.D. Schreckengast / M.D. Schreckengast / Health + Safety Supervisor / 2/5/97
Name / Signature / Title / Date

Table 1. Emergency Contact Telephone and Pager Numbers

Fire	x. 2911	Poison Center	629-1123
Ambulance	x. 2911	Security	x. 2911

Nearest Emergency Medical Services Are Located At Building 122 as shown on the attached map.

Nearest telephone is located at: T893 B

Additional Project Telephone Numbers

Vice President - ER - Ann Tyson	x4829/d1101
H&S Manager - Ken Jenkins	x5374/d7455
Project Manager - Annette Primrose	x4385/d4675
Field Manager/Geologist - Fred Grigsby	x7728/d7469
H&S Supervisor - Peggy Schreckengast	x6790/d3059
HSS - Harold Sanchez/Tim Zimmerman	x4953
HAZMAT Emergency Response	x2911
Occupational Health General Information	x2594

Note: d = digital page, the digital page system can be activated on plantsite by dialing extension 4000, then following the instructions.

SW059 Analytical Data

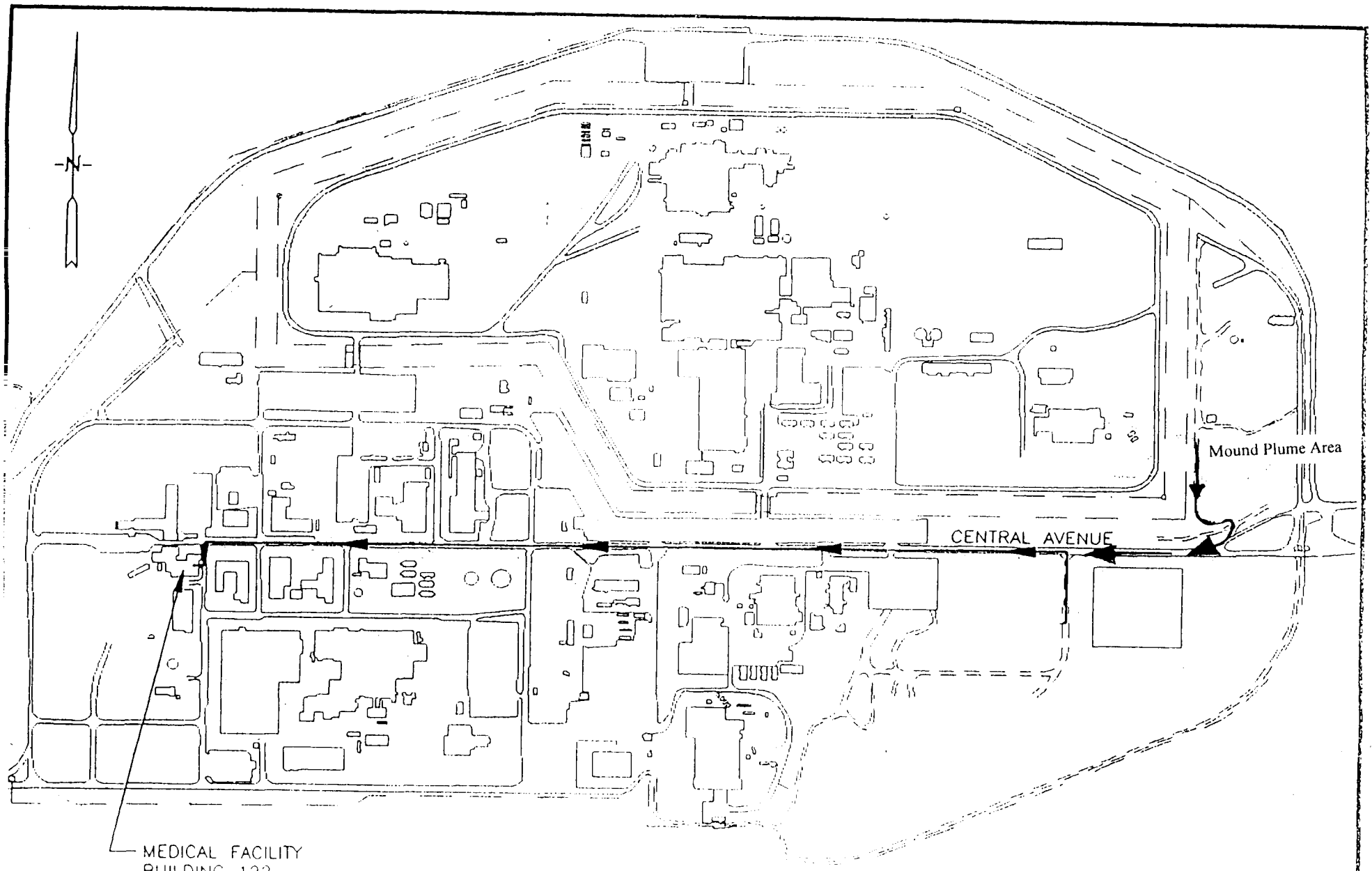
Group Code	Chemical Name	Unit of Measure	Minimum Value	Maximum Value	Average Detect	Number of Detects	ALF GW Tier I Action Levels ug/l	ALF GW Tier II Action Levels ug/l	Notes
Dis. Metals	ALUMINUM	UG/L	13.20	18.06	15.63	2	10,600,000	106,000	
Dis. Metals	ANTIMONY	UG/L	11.89	16.00	13.56	8	600	6	Above Tier II
Dis. Metals	BARIUM	UG/L	138	180	165.14	17	200,000	2,000	
Dis. Metals	CADMIUM	UG/L	1.90	3.00	2.59	4	500	5	
Dis. Metals	CALCIUM	UG/L	86,900	118,000	107,985	17			
Dis. Metals	COBALT	UG/L	1.71	1.71	1.71	1	219,000	2,190	
Dis. Metals	COPPER	UG/L	1.20	4.00	2.41	14	130,000	1,300	
Dis. Metals	IRON	UG/L	8.75	40.50	19.15	5			
Dis. Metals	LEAD	UG/L	0.91	5.40	2.59	3			
Dis. Metals	MAGNESIUM	UG/L	19,300	35,165	32,792.04	17			
Dis. Metals	MANGANESE	UG/L	2.20	339.15	269.78	17	18,300	183	Above Tier II
Dis. Metals	NICKEL	UG/L	3.70	5.13	4.21	3	10,000	100	
Dis. Metals	POTASSIUM	UG/L	469	2,940	1,103.91	17			
Dis. Metals	SODIUM	UG/L	38,000	47,600	41,625.72	17			
Dis. Metals	THALLIUM	UG/L	4.60	4.60	4.60	1	200	2	Above Tier II
Dis. Metals	VANADIUM	UG/L	1.40	3.40	2.33	12	25,600	256	
Dis. Metals	ZINC	UG/L	49.10	232.00	144.77	17	1,100,000	11,000	
Tot. Metals	ALUMINUM	UG/L	58.70	21,000	1,778	14	10,600,000	106,000	
Tot. Metals	ANTIMONY	UG/L	11.30	11.30	11.30	1	600	6	Above Tier II
Tot. Metals	ARSENIC	UG/L	1.50	4.40	2.95	2	5,000	50	
Tot. Metals	BARIUM	UG/L	159.00	307.00	175.63	15	200,000	2,000	
Tot. Metals	BERYLLIUM	UG/L	1.00	1.00	1.00	1	400	4	
Tot. Metals	CALCIUM	UG/L	102,000	128,000	108,487	15			
Tot. Metals	CHROMIUM	UG/L	10.40	10.40	10.40	1	10,000	100	
Tot. Metals	COBALT	UG/L	3.50	3.50	3.50	1	219,000	2,190	
Tot. Metals	COPPER	UG/L	2.36	16.00	5.06	8	130,000	1,300	
Tot. Metals	IRON	UG/L	48.50	12,100.00	1,012.89	15			
Tot. Metals	LEAD	UG/L	2.20	23.20	7.27	5			
Tot. Metals	MAGNESIUM	UG/L	31,700	37,600	33,017	15			
Tot. Metals	MANGANESE	UG/L	258	1,440	387	15	18,300	183	Above Tier II
Tot. Metals	NICKEL	UG/L	3.80	13.80	7.30	3			
Tot. Metals	POTASSIUM	UG/L	653	2,570	1,051	15			
Tot. Metals	SELENIUM	UG/L	2.70	2.70	2.70	16	5,000	50	
Tot. Metals	VANADIUM	UG/L	1.60	24.80	4.44	12	25,600	256	
Tot. Metals	ZINC	UG/L	219	746	305	15	1,100,000	11,000	
Tot. Rads	AMERICIUM-241	PCI/L	0.25	0.25	0.25	1	14.5	0.145	Above Tier II
Tot. Rads	CESIUM-134	PCI/L	0.23	0.57	0.40	2	151	0.151	Above Tier II
Tot. Rads	GROSS ALPHA	PCI/L	4.20	10.87	8.59	14			
Tot. Rads	GROSS BETA	PCI/L	3.10	28.00	8.09	14			
Tot. Rads	PLUTONIUM-238	PCI/L	0.01	0.01	0.01	1			
Tot. Rads	PLUTONIUM-239/240	PCI/L	0.01	0.18	0.05	9	151	0.151	Above Tier II
Tot. Rads	RADIUM-226	PCI/L	0.63	0.63	0.63	1	2,000	20	
Tot. Rads	STRONTIUM-89,90	PCI/L	1.12	1.12	1.12	1	462	4.620	Strontium 89 only
Tot. Rads	TRITIUM	PCI/L	82.17	82.17	82.17	1	66,600	666	
Tot. Rads	URANIUM, TOTAL	UG/L	25	25	25	1			
Tot. Rads	URANIUM-233,-234	PCI/L	3.40	3.40	3.40	1	298	2.980	U233+D only Above Tier II
Tot. Rads	URANIUM-235	PCI/L	0.10	0.10	0.10	1	101	1.010	
Tot. Rads	URANIUM-238	PCI/L	3.02	3.02	3.02	1	76.8	0.768	Above Tier II
VOA524.2	1,1,1-TRICHLOROETHANE	UG/L	0.10	9.00	1.82	17	20,000	200	
VOA524.2	1,1-DICHLOROETHANE	UG/L	0.30	2.00	0.54	15	101,000	1,010	
VOA524.2	1,1-DICHLOROETHENE	UG/L	0.30	5.00	0.94	11	700	7	
VOA524.2	1,2-DICHLOROETHANE	UG/L	1.00	1.00	1.00	1	500	5	
VOA524.2	CARBON TETRACHLORIDE	UG/L	3.00	130.00	33.94	6	500	5	Above Tier II
VOA524.2	CHLOROFORM	UG/L	2.00	25.00	8.75	16	10,000	100	
VOA524.2	cis-1,2-DICHLOROETHENE	UG/L	4.00	41.00	16.56	16	7,000	70	1,2 Dichloroethene (total)
VOA524.2	METHYLENE CHLORIDE	UG/L	0.10	18.00	2.74	7	500	5	Above Tier II
VOA524.2	NAPHTHALENE	UG/L	3	3	3	1	146,000	1,460	
VOA524.2	TETRACHLOROETHENE	UG/L	1.00	54.00	11.56	16	500	5	Above Tier II
VOA524.2	TRICHLOROETHENE	UG/L	1	76	16	16	500	5	Above Tier II
VOA524.2	TRICHLOROFLUOROMETHANE	UG/L	0.40	0.40	0.40	1			
VOA524.2	VINYL CHLORIDE	UG/L	0.70	3.00	1.68	4	200	2	Above Tier II
Water Qual.	BICARBONATE AS CACO3	MG/L	280	446	360	15			
Water Qual.	CARBONATE AS CACO3	MG/L	28	28	28	1			
Water Qual.	CHLORIDE	MG/L	33.60	81.50	65.04	16			
Water Qual.	FLUORIDE	MG/L	0.10	1.40	1.14	16			
Water Qual.	SULFATE	MG/L	27.00	48.90	60.19	15			
Water Qual.	TOTAL DISSOLVED SOLIDS	MG/L	470	609	532	15			
Water Qual.	TOTAL ORGANIC CARBON	MG/L	2.50	13.10	4.74	12			
Water Qual.	TOTAL SUSPENDED SOLIDS	MG/L	6	672	94	12			

Note: Metal standards are for dissolved metals only but are applied to total metals on this work sheet.

ROCKY MOUNTAIN REMEDIATION SERVICES		
ACTIVITY HAZARD ANALYSIS REPORT NUMBER:		
JOB/PROJECT:	SW059 Site Characterization	
ACTIVITY DESCRIPTION:	Geoprobe soil cores and groundwater sampling	
Activity	**Potential Hazard**	**Protective Control Measures**
1) Geotechnical investigation including soil cores and groundwater sampling	Slips, trips, and falls	Pre-activity work area survey to identify potential hazards associated with operations. Hazard assessment per section 5.3.6.*
	Exposure to airborne radioactive or chemical contaminants	On-site monitoring requirements will be established prior to project implementation per section 6.0 and 7.0*.
	Dermal exposure with radioactive or chemical contaminants in soils and groundwater.	Establish monitoring program prior to operations. Define appropriate level of PPE.
	Mechanical/hydraulic hazards	Pre-work safety discussion and procedures identified in section 5.3.1*.
	Noise exposure	Hearing protection will be required during geoprobe hammer operations.
	Electrical hazards	Clearances will be maintained per section 5.3.2*.
	Underground/above-ground utilities	Utility clearances will be performed per section 5.3*.
	Cold stress/heat stress	Pre-work discussion to ensure awareness. Follow guidance in section 5.7*.
2) Equipment decontamination	Contact with potentially contaminated rinse water	Personal PPE will be defined prior to decon operations
	Similar exposure hazards as identified above.	PPE and monitoring requirements consistent with geotechnical operations.
	High pressure steaming, as appropriate	PPE as described in section 8.0*.
H&S TRAINING:		
SPECIAL EQUIPMENT:		
CRAFT FOREMAN CONCURRENCE:	NA	
H&S CONCURRENCE:	M.D. Schuckengast	2/6/97
CONSTRUCTION SUPERINTENDANT CONCURRENCE:		Annette Pumroy 2/6/97
* refers to the appropriate section in the WARP 1996 HSP RF/ER-96-0016		

I have read the contents of this HSP addendum, am familiar with the WARP HSP, and agree to comply with the contents within.

Name	Signature	Title	Date
Harold K Sanchez	Harold K Sanchez	HSS	2/17/97
Kim Jackson	Kim Jackson	Tech	2/19/97
Ray Michael	Ray Michael	Tech	2/19/97
Jim Zimmerman	Jimothy J. Zimmerman	HSS	2/17/97
Fred Grigsby	Fred Grigsby	Foreman	2/19/97
Annette Primrose	Annette Primrose	Sr. Proj Mgr	2/19/97
Robert Smith	Robert Smith	Geologist	2/26/97



ROUTE TO RFETS
MEDICAL FACILITY (BLDG 122)

Figure 2-1

Revised Ap A for
Health and Safety , ..dendum #2
PLANNED INTRUSIVE ACTIVITIES DURING JULY-AUGUST, 1996
WITHIN THE MOUND AREA

Site Location and Description:

Location: Mound Area, Formerly OU2 at SE Corner of the Protected Area (PA)
Description: Geoprobe Borings, collect soil gas, water and soil samples

Suspect Contaminates:

MONITORING REQUIREMENTS			ACTION LEVELS IN BZ				
	PEL	Instrument	Range	Level D Modified	Level C	Level B	Notes
Hydrocarbons	---	PID	0-2000 ppm	0 ppm	NA	*	Any sustained reading above background in the BZ
Particulates	10 mg/m^3	MIE Miniram	.1 -100 mg/m^3	0-2.5 mg/m^3	*	*	* Dust control (misting) will be used above 2.5 mg/m^3

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Personal Monitoring:

Contaminant	Analytical Method
Monitor for VOAs using personal sampling methods, if neccessary, upgrade for respiratory	NIOSH Methods

Personal Protective Equipment:

Type of Work	Level D	Level D Modified	Tyvek Coveralls	Saranex Coveralls	Nitrile Gloves	Silvershield Gloves	Latex Gloves	Face Shields	Rubber Apron	Full-Face Respirator
Geoprobe -Soil Gas Sampling [1]	x				x		x			
Geoprobe -Groundwater Sampling[1]	x				x		x			
Geoprobe -Soil Sampling[1]	x				x		x			

(1) If high VOAs reading or free liquids are encountered personal will upgrade to Saranex and Face Shields. Sustained readings of VOCs in the breathing zone will require backing off and allowing samples to vent. If workers must work where VOC readings are sustained in the breathing zone, work will stop and supplied air respiratory protection will be used

Notes:
PEL = Permissible Exposure Limit
PID = photoionization detector
ppm = parts per million
mg/m^3 = milligrams per cubic meter
PPE = personal protective equipment
NA = not applicable
NIOSH = National Institute for Occupation Safety and Health

SW059 RADIOLOGICAL SUSPENSION LIMITS